

## SUMMARY OF QUALIFICATIONS

- Three years of research experience with a research article publication on [structural nonlinear dynamic systems](#)
- Certified in Machine Learning and Robotics specialization
- Strong problem solving, critical thinking, leadership, analytical, and independent/teamwork skills
- Experience working with people from diverse cultural backgrounds and cross-functional teams
- Programming knowledge in Python, C/C++, SQL/NoSQL, MATLAB, R, C#, HTML, CSS
- Tools: Linux, Git, Docker, Kubernetes, Tableau, PySpark, Databricks, Jira, Jenkins, SonarQube, Azure, JSON, Visual Studio, Apache Spark
- Frameworks: PyTorch, TensorFlow, FastAPI, NLTK, LangChain, Vertex AI, OpenCV, Keras, Scikit-learn, Streamlit, NumPy, Pandas, Seaborn, Matplotlib

## EDUCATION

<b>University of Washington</b>	Seattle, WA
Master of Science in Mechanical Engineering (Data Science)	June 2023
<ul style="list-style-type: none"><li>• Relevant Coursework: Software Development for Data Scientists, Data Science and Materials Informatics, Natural Language Processing, Database Management Systems, Reinforcement Learning, Deep Learning, Computer Vision, Applied Parallel Computing, Control Systems</li></ul>	
<b>National Institute of Technology</b>	Rourkela, India
Bachelor of Technology in Mechanical Engineering	June 2018
<ul style="list-style-type: none"><li>• Relevant Coursework: Data Structures and Algorithms, C and C++, Advanced Mechatronics, Computer Graphics for CAD/CAM</li></ul>	

## WORK EXPERIENCE

<b>Data Scientist</b>	Oct 2023 - Nov 2023
IronChopsticks Co.	Seattle, WA
<ul style="list-style-type: none"><li>• Coordinated in web scrapping for data collection and understanding data storage for better search results</li><li>• Developed a search and recommendation feature for web-application to improve search personalization</li><li>• Initiated to develop metrics for recommendation system with decision-support and ranking-based metrics</li><li>• Conducted code refactoring, documentation and use of NLP and ML algorithms study for scalability</li></ul>	
<b>Machine Learning Intern</b>	Sept 2022 - Mar 2023
Chubb Insurance	Jersey City, NJ (Remote)
<ul style="list-style-type: none"><li>• Completed data extraction on unstructured documents for classification with Azure form recognizer API</li><li>• Implemented data postprocessing algorithm with regular expressions after information extraction</li><li>• Trained data on customized AI models with Azure Doc AI for entity detection with 80% accuracy</li><li>• Designed automated data capture tool by Azure entity extraction via FastAPI, Docker, Kubernetes, CI/CD test</li><li>• Developed a ML anomaly detection algorithm for fraud claims by probabilistic unsupervised learning</li></ul>	
<b>Student Technician III - IT Developer</b>	Aug 2022 - Sept 2022
University of Washington	Seattle, WA
<ul style="list-style-type: none"><li>• Developed efficient documentation scheme for the codebase in C# and .NET</li><li>• Researched on code refactoring to improve code readability, maintainability and performance</li></ul>	

## PROJECTS

<b>Machine Learning with Material Science Project</b>	Jan 2023 - Mar 2023
University of Washington	Seattle, WA
<ul style="list-style-type: none"><li>• Completed a course project and contributed to open-source python library solcore to model, analyze and visualize solar cells and semiconductor data</li></ul>	
<b>Database Application Development Project</b>	Sept 2022 - Dec 2022
University of Washington	Seattle, WA
<ul style="list-style-type: none"><li>• Accomplished study on query languages (SQL, datalog), data models (relational, semi-structured), language bindings, conceptual modeling, security, database tuning and indexing, data warehousing, parallelism (MapReduce, Spark), web-data management, schema design, logical and physical design, SQL Server on Windows Azure, transactions, cloud database systems, SQLite, AsterixDB</li><li>• Developed and designed a database application with functionalities to create and manage user records, login and logout, for scheduling and inventory management using SQL from within Python library pymssql that run on command line terminal with database server connected via Azure</li></ul>	
<b>Database Development Project</b>	Jun 2022 - Aug 2022
Institute for Health Metrics and Evaluation	Seattle, WA
<ul style="list-style-type: none"><li>• Supervised a team for the project on database design and management</li><li>• Developed an Entity Relationship (E/R) diagram with the existing database and SQL files for better efficiency</li><li>• Investigated issues in the architecture based on E/R diagram for faster performance to read/write to the database</li></ul>	
<b>Deep Learning Project</b>	Apr 2022 - Jun 2022
University of Washington	Seattle, WA
<ul style="list-style-type: none"><li>• Accomplished study on approximation, optimization and generalization theory, deep reinforcement learning, neural network architecture, transformer, encoder-decoder, representation and unsupervised learning</li><li>• Conducted a research article study on Long-Term Visual Dynamics with Region Proposal Interaction Networks</li><li>• Analyzed the representation learning for images and physical reasoning by Convolution Interaction Networks</li></ul>	
<b>Computer Vision Project</b>	Apr 2022 - Jun 2022
University of Washington	Seattle, WA
<ul style="list-style-type: none"><li>• Accomplished study on image coordinates and transforms, resizing, filters and convolutions, interest operators, image matching and stitching, face/object detection, CNN applications, motion/optical flow</li><li>• Conducted a research article study on Global Association Network for Lane Detection with ResNet architecture</li><li>• Developed a ResNeXt model as the backbone replacing ResNet with self-attention and achieved 94% F1 score</li></ul>	
<b>Applied Parallel Computing Project</b>	Apr 2022 - Jun 2022
University of Washington	Seattle, WA
<ul style="list-style-type: none"><li>• Accomplished study on GPU utilization, CUDA and numba libraries in python and memory allocation</li></ul>	

- Developed an algorithm to determine the Stereoscopic Depth Perception with 3 billion pixel calculations
- Implemented parallelization using global memory, 2D grid and 32 threads per block for faster computation
- Achieved an accuracy of 85% with 147x times faster computation compared to sequential algorithm

**Natural Language Processing Project**

Jan 2022 - Mar 2022

University of Washington

Seattle, WA

- Accomplished study on language modeling, vector embeddings, morphology and WFST’s, sequence labeling and conditional random fields, syntax, semantics, linguistic structure prediction, translation and sequence-to-sequence models
- Conducted a research article study on aspect-based sentiment analysis (ABSA) using supervised contrastive learning, transformer encoder and BERT
- Analyzed the results of the model and validated it with a new dataset achieving 86% accuracy

**Data Science and Material Informatics Project**

Sept 2021 - Dec 2021

University of Washington

Seattle, WA

- Conducted a research article study on heterogeneous deformation in grain boundary regions on shock loaded tantalum element with nanoindentation
- Implemented machine learning-based analysis to compare with the experimental data
- Trained the data on linear and multilinear regression for the element characteristic predictions and used elbow and silhouette methods to predict optimal clusters on different nanoindentation methods
- Achieved 82% accuracy on regression and 80% on classification
- Applied ANN, CNN for image classification, KNN classification, decision trees, PCA, SOM, SVM and K-means clustering for large datasets of material properties to analyze and evaluate material features
- Developed ML models with visualization in seaborn, plotly, altair, bokeh, pygal, gleam, plotnine, matplotlib

**Software Development for Data Scientist Project**

Sept 2021 - Dec 2021

University of Washington

Seattle, WA

- Developed real-time user-interface web application with streamlit framework to display stock price metrics with sentiment based trading algorithm
- Collected an average of 1.6 million data points from media posts related to a specific stock ticker and its corresponding stock price data
- Designed an algorithm with VADER module which generated social media specific sentiments for the stock and converted them to a trading indicator
- Applied deep reinforcement learning to factor the trading signal and the stock price to make buy/sell decisions for one year
- Achieved an overall accuracy of above 70% on model decision with the expected result

**Machine Learning Certification**

May 2020 - Aug 2020

Stanford University (Coursera)

- Developed a robust method of automated handwritten digit recognition with neural network learning
- Developed an SVM spam classifier with a training accuracy of 99.8% and a test accuracy of 98.5%
- Developed an image compression algorithm by K-means clustering
- Developed a PCA system for low-dimensional representation of 5000 image dataset
- Developed an anomaly detection system to detect failing servers on a network
- Developed a collaborative filtering learning algorithm to build a recommender system for movies

**Robotics Specialization Certification**

May 2020 - Aug 2020

University of Pennsylvania (Coursera)

- Developed a simple augmented reality application using KLT, homograph and perspective projection
- Developed a Kalman filter model for ball tracking in 2D space
- Developed a bundle adjustment algorithm to extract key elements of structure from motion
- Developed a particle filter algorithm for pose tracking in 2D space for robot localization from LIDAR
- Developed an Occupancy Grid Mapping tool with Log-odd update for a 2D map with sensor readings and poses
- Developed a simulation of Gaussian model for learning ball color and detection based on the color model
- Developed a 2-link and 6-link robot arm simulation to navigate complex configuration based on probabilistic road maps and artificial potential fields
- Designed and developed a simulation of 1D, 2D and 3D PD controller with trajectory generation

## ADDITIONAL EXPERIENCE

**Database and Student Programs Assistant**

Aug 2023 - Present

Foundation for International Understanding Through Students (FIUTS)

Seattle, WA

- Analyzed to automate read/write to Salesforce database with Process Builder, Flows and Integration features
- Facilitated with student programs to setup, manage student data and lead activities
- Initiated to improve data warehouse performance by indexing and removing redundant and duplicate data

**Code-To-Give Hackathon**

Mar 2022 - Apr 2022

Morgan Stanley

Alpharetta, GA (Remote)

- Designed a web application with HTML, CSS, JavaScript and Python with Bootstrap and Django framework
- Developed features for the application to schedule an appointment and setup a profile

**Student Assistant**

Sept 2021 - Aug 2022

University of Washington

Seattle, WA

- Mastered 7 different point-of-service (POS) computer system for order taking in the first week
- Maintained high standards of customer service during high-volume, fast-paced operations
- Managed flow of students to prepare for busy hours and handled credit transactions quickly and accurately
- Communicated clearly and positively with coworkers and management and resolved complaints professionally
- Coordinated and cross-trained scheduling with team members to ensure seamless service
- Demonstrated initiative by identifying and undertaking new tasks after fulfilling assigned responsibilities

**Student Researcher**

Jun 2018 - Dec 2019

National Institute of Technology

Rourkela, India

- Analyzed the coupled nonlinear dynamics of beam with moving mass to evaluate the modal behavior of system
- Designed fundamental geometric model with nonlinearities of the dynamic structure with energy conversion
- Applied Hamilton’s principle, Galerkin Discretization and Method of Multiple Scales for analytical framework
- Developed MATLAB ODE solver algorithm for numerical analysis and simulation
- Achieved a confidence of greater than 90% between analytical, numerical and simulation results
- Published a research article in the Journal of Applied Acoustics